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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/967,009	09/28/2001	Ashok N. Rudrapatna	21-1	5654

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EXAMINER	
BAKER, STEPHEN M	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/967,009	RUDRAPATNA ET AL.	
	Examiner	Art Unit	
	Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 3-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1: "forming separately at least two error control coded streams" is vague in the context of applicant's arguments and apparently should be "forming at least two error control coded streams, using a separate error control code encoder for each stream" or the like.

In claim 10: "error control coded streams that are formed separately" is vague in the context of applicant's arguments and apparently should be "error control coded streams formed separately using respective separate error control code encoders" or the like, however, as the exact same set of data streams could be formed with or without separate error control code encoders, the limitation provides no distinction in the decoding arrangement claimed.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0027956 to Lee *et al* (hereafter Lee).

Lee discloses a wireless data transmission arrangement including transmitter circuitry (FIG. 6) comprising a pair of turbo code encoders (504, 512) for "forming separately at least two error control coded streams" from a "block of information". Separate antennas (path1, path2) are used by Lee's transmitter to transmit the respective "error control coded streams". Lee's data transmission arrangement further uses an ARQ protocol, and therefor transmits this data in response to a "confirmation message" of the ARQ protocol.

5. Claims 1 and 3-9 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Pub. No. 2003/0072285 to Onggosanusi *et al* (hereafter Onggosanusi).

Onggosanusi discloses a MIMO hybrid-ARQ system with Chase packet error correction decoding or Incremental Redundancy sub-packet error correction decoding. Onggosanusi shows (FIG. 1) transmitter circuitry including a plurality of transmission antennas (1, 2, ..., p) for transmitting a plurality of "streams" as the next block "sub-packet" or "packet" in response to a "confirmation message" (ACK) of a preceding block. Spreading units (108) form transmission streams separately, and the transmission streams so formed are "error control coded" streams, so it can be said that Onggosanusi shows "forming separately at least two error control coded streams from the block of information".

Regarding claim 9, the system disclosed by Onggosanusi can be considered a "one-to-many" communication system" as a single base station typically communicates with several mobile units.

6. Claims 1, 3, 4 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,771,705 to Kenney *et al* (hereafter Kenney).

Kenney discloses a wireless data transmission arrangement including transmitter circuitry (FIG. 2) comprising a pair of turbo code component encoders (201, 204) for "forming separately at least two error control coded streams" from a "block of information". Separate antennas (113, 114) are used by Kenney's transmitter to transmit the respective "error control coded streams". Kenney's data transmission arrangement further uses a hybrid ARQ protocol with incremental redundancy (col. 7, lines 26+), and therefor transmits this data in response to a "confirmation message" of the ARQ protocol.

Regarding claim 9, the system disclosed by Kenney can be considered a "one-to-many" communication system" as a single base station typically communicates with several mobile units.

7. Claims 10-21 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,909,758 to Ramesh *et al* (hereafter Ramesh).

Ramesh discloses a wireless data transmission arrangement of a "multiple antenna system" including a transmitter that separately forms two error control coded streams (col. 7, lines 11+) and a receiver that "performs independent error detection of at least two of the received error control coded streams", using a CRC decoding (col. 8,

lines 24+) and returns a negative "confirmation message" (NACK) to the transmitter when decoding is not successful.

Regarding claim 14, the system disclosed by Ramesh uses incremental redundancy.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1 and 3-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,751,187 to Walton *et al* (hereafter "Walton") in view of U.S. Patent No. 6,952,454 to Jalali *et al* (hereafter "Jalali").

Walton discloses MIMO radio transmission system arrangements including an embodiment with separate encoding (Fig. 4c), by forward error correction (FEC) code encoders (412a - 412t), of portions of a "block of information" in order to form a plurality of streams, thereby "forming separately at least two error control coded streams from the block of information." Each stream so generated by Walton's above-cited arrangement is transmitted by a respective antenna (324a - 324t) of a "multiple antenna system."

Regarding claim 1, Walton's "information" can be voice or data, presumably transmitted in packets, however Walton does not disclose the use of "confirmation

messages" such as ACK or NAK messages. Jalali, as does Walton, discloses MIMO radio transmission system arrangements with FEC. Jalali further includes the use of "confirmation messages" such as ACK or NAK messages of an automatic retransmission protocol (ARQ). As is well known in the art, a retransmission protocol can provide additional reliability to FEC encoded data. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply Jalali's retransmission protocol confirmations to Walton's transmission system. Such an application would have been obvious because the advantages of providing additional reliability to FEC encoded data by means of a retransmission protocol involving "confirmation messages" were already well known, as evidenced by Jalali.

Regarding claims 3-8 and 13-21, Official Notice is taken that the recited limitations are conventional for a Chase decoding or an Incremental Redundancy protocol, other than the application to parallel streams, and that the suitability of a Chase decoding, or an Incremental Redundancy protocol, in an ARQ-FEC system was already well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply a Chase protocol or Incremental Redundancy protocol to the error control processing in the above-cited combination of Walton and Jalali. Such an application would have been obvious because the suitability of a Chase decoding, or an Incremental Redundancy protocol, in an ARQ-FEC system was already well known.

Regarding claims 10-12, corresponding FEC decoding arrangements presumably required for Walton's separate FEC encoding (Fig. 4c) embodiment provide "independent error detection."

Regarding claim 9, Walton provides a "many-to-many communication system" at least in terms of antenna paths.

Response to Arguments

10. Applicant's arguments filed 31 October 2005 have been fully considered but they are not persuasive. Applicant's arguments regarding "forming separately at least two error control coded streams" and "error control coded streams that are formed separately" are addressed by the present rejection of the claims under 35 U.S.C. 112.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen M. Baker
Primary Examiner
Art Unit 2133

smb